

U.S. Naval War College

Global 2001 War Game

Knowledge Management Insights from Global 2001: Command and Control in an Information Rich Environment

Mr. Tom Rossi and Ms. Gia Harrigan
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Agenda

- **Background- Global War Game**
- **Knowledge Engineering- Game Build and Tools**
 - **Defining the C2 Structure**
 - **Innovation Lab**
 - **Web Development Team**
 - **Players' Handbook**
- **Lessons Learned, Emerging Trends**
- **Concluding Remarks**



Naval War College

- Using war gaming as an ***operational lab*** in the IT development cycle
 - Looking at future KM technology in an operational environment
 - Instant feedback from senior warriors of all services
 - Shortens the timeline from technical development to Fleet implementation



What is the US Navy Global War Game?

- **Annual war game sponsored by the Naval War College**
- **Designed to explore operational potential of forces with 21st century capabilities**
- **Focus on operational level of warfare**
 - Collaborative planning
 - Large scale synchronization
 - Dynamic situational awareness
- **A laboratory environment to explore 21st century warfare**



Global War Game (prior to 2001)

- **Some Lessons**

- **E-Mail & Internet - as is, do not equal the tool set required for combat C2**
- **No one has the answer YET, Technically, Tactically or Organizationally**
- **Ballistic and Cruise Missiles coming of age**
- **Need for rapid and joint crises response**



Global 2001 Objectives

Explore Network Centric Operations and its associated pillars by conducting joint/coalition contingency operations with uncertain warning using rapidly deployable forces

Apply within the emerging joint/coalition operational framework defined by:

- Rapid Decisive Operations (JFCOM)**
- Joint Mission Force (PACOM)**

Focus Areas

- C2 in an Information Rich**

Environment

- Expeditionary Sensor Grid**
- High Speed Vessels**



Global 2001's Challenge

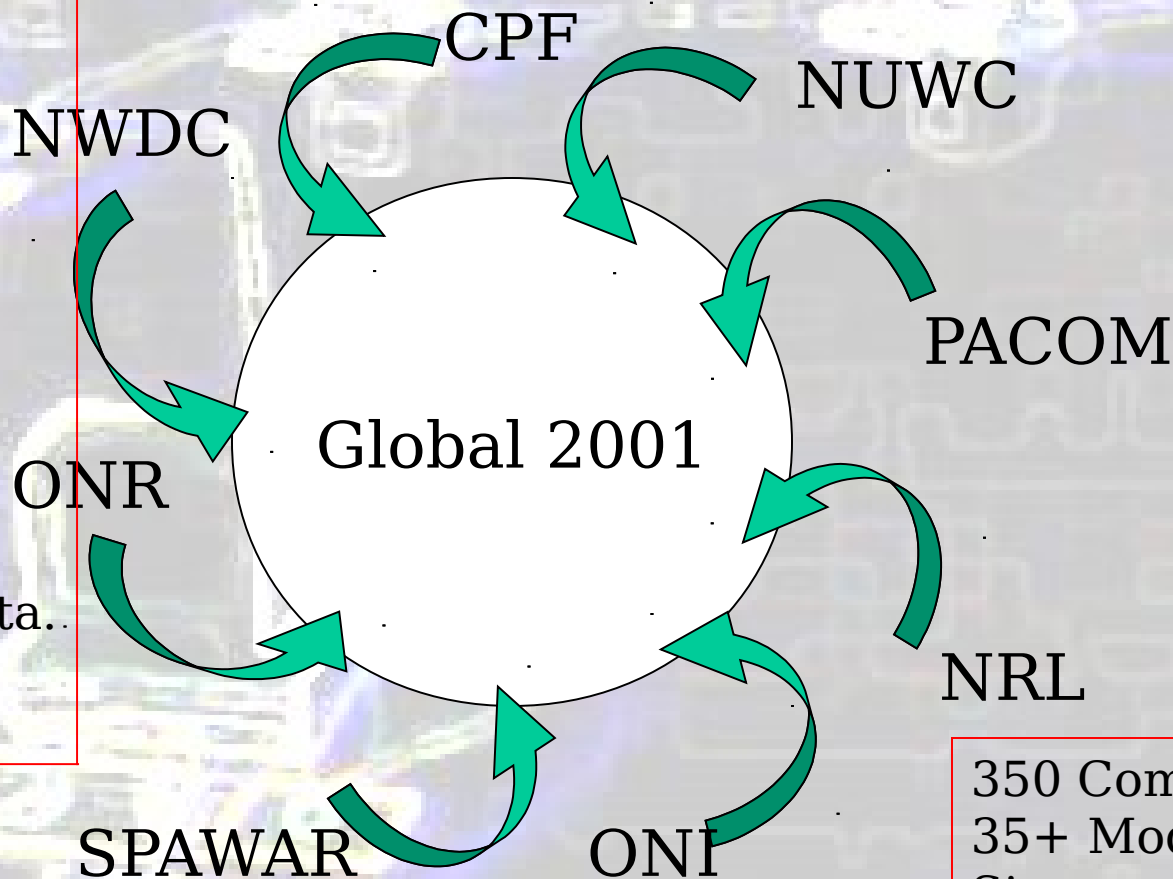
- **Create an environment to facilitate net-centric Command & Control in the year 2011**
- **Considerations:**
 - **Controlling the Battle Tempo - How?**
 - **What does the C2 structure look like?**
 - **Shared Common Operational Picture**
 - **Shared Awareness of subordinate commanders' summaries**
 - **Real-time collaboration**
 - **Concurrent planning capability**
 - **Effective feedback loops**
- **What does IT look like in 2011?**



Knowledge Management Partners



DARPA
BMDO
NPGS
U of Arizona
George Mason U
Harvard
Johns Hopkins
Anteon
Aptica
Arthur Andersen
Boeing
Coastal Systems Sta..
Lockheed-Martin
Raytheon



350 Computers
35+ Models &
Sims
and IT
Tools



KM Approach

- **3 Teams -**
 - ***Knowledge Engineering***: Who needs to have what info, when, and in what format?
 - ***Metrics***: What will we measure to see if our KM efforts made a difference, and how?
 - ***Knowledge Sharing***: What should we capture through the game build and execution processes? With whom and how do we share?



Knowledge Engineering The Game Build



- ***Defining the C2 structure***
 - CINC / JTF / Functional Component CDRs / Forces
 - Information Exchange Requirements
- ***Innovation Lab***
 - Define collaborative environment
 - Evaluate ACTDs for potential use in game
- ***Web Development Team***
 - War gaming Information Grid System (WIGS)
 - Developing required tools



Knowledge Engineering The Game Build



Defining the C2 structure

CJTF

**Issue Commander's Intent
Include Desired Effects**

J1

J6

J35

ISR MAN JFIRES LOG

**Issue Effects Directive to
Functional Component
Commanders**

FEEDBACK

PLANNING

| JOINT FUNCT COMPONENT | CDR | | NAVFOR | AFFOR | MARFOR | ARFOR | JSOTF |
|--------------------------|------|--|---------|----------------------------|--------|-------------------|--------|
| | | | SVC COM | JFMCC JFACC (JFTMDC) | JFLCC | JFLCC (JFTMDC) | JFSOCC |
| | Wk 1 | | JFMCC | JFACC | JFLCC | JFLCC (JFTMDC) | JFSOCC |
| | Wk 2 | | JFMCC | JFACC | JFLCC | JFLCC (JFTMDC) | JFSOCC |

EXECUTION TASKING

FEEDBACK

**Issue Task Orders to
Assigned Forces**



Planning & Execution Facilitation

PROCESS

Operational Net
Assessment

Mission Planning

Execution Planning

Execution Operations

CINC Staff

CJTF Staff

FCC Staff

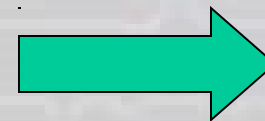
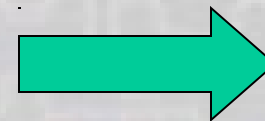
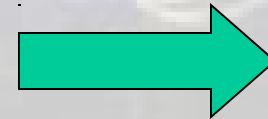
SCC Staff

PRODUCTS

**Effects
Directi
ve**

**Missio
n Plan**

**Taskin
g
Order**



Information on Resources (Input)

- Prioritized Target lists from components and ISR/Log/Man
- Model Inputs (NSS?)
- ISR Products
- J31 Feedback
- Desired Effects
- Operational Net Assessment

Information Exchange Requirement

Future OPS ** Fires

- ~~Deconfliction~~
- Virtual Meetings / Collaborative Tool
- “Targeting”
- Dynamic Replanning

**** All IO stuff needs to fit in Fires IERs**

**** Target Folders??**

Products (Output)

- Master Attack Plan
- EMTO Input
 - Fires
 - I.O.
- ATO Input / guidance
- ISR support request
- RFI
- Targets



Knowledge Engineering The Game Build



Innovation Lab

File

Edit

View

Favorites

Tools

Help

Back

Forward

Stop

Home

Search

Favorites

History

Print

Download

W

Go

Address

/ecs_server/conferencing/default.asp?ID=BAAAAIIA4AB0xbcQGoLgCAAAAAAgE7+DAHXBQAIAAAAAAAAAAAAAAEdHdi+qyRMgBqkQkB/6ZY=8ST=2001:7:25:12:0:08P=

Microsoft Exchange 2000 Conferencing Server

help refresh

Conference in Session

The conference ends in:
20:01:31

j-kw1

Participants

j-00

j-3

Video

Zoom

About

j-3

j-00

Chat - chatting with 1 other(s)

File Edit View Help

J-KW1
First MEB Moving North on HWY 4 to DOHA

Message:

Send To:

Everyone In Chat

Chat is active

Share an application

First, start the application. Then click this button and select the application from the dialog box. To give another meeting participant control of the application, click **Allow control**.

Chat

Click to chat with other participants.

Draw on a whiteboard

Click to open a whiteboard that participants can use to make sketches or share graphics.

Send a file

Click to send a file to one or more participants.



Knowledge Wall

Projection of Shared Awareness

- **ONR funded SPAWAR developed**
 - Used in Global 2000 (Deployed on Carl Vinson)
- **CJTF “Status at a Glance” Dynamic Status Board**
 - Provides current and future status
 - Alerts you to a status change
- **Bore down capability for greater detail**
- **Operators do not need to be web programmers**
 - Create content in 5 min. using SumMaker and TacGraph
- **Knowledge Desks used in Global are being transitioned to the Fleet for use ahead of schedule**



Knowledge Engineering The Game Build



Web Development Team



WIGS

One stop shopping for C2 info

- ***Web Planning Tool*** - template tool which allows drafts to be constructed over time
- ***Scrolling Marquee*** - CDR's bulletin board
- ***Unit Tasking Tool*** - matrix views of existing tasking sortable by unit, tasking order, or FCC
- ***Tool Kit*** - "Janes" info on all objects in game
- ***Gauge board*** - graphic view of Commander's Critical Information Requirements (CCIRs)
- ***ROE*** - Sortable rules of engagement and tool to request and monitor ROE changes
- ***RFI*** - threaded discussions on requests for information



WIGS

One stop shopping for C2 info



- ***MOE Assessment Tool*** - TAPS used provide visual assessment of task effectiveness with respect to the original desired effect
- ***Task Order Assessment Tool*** - provided feedback to planners on net results of assigned tasks
- ***Command Net*** - on-line battle watch logs for the CJTF and all component commanders
- ***Links*** -COP, METOC, INTEL, ECS, Instant Messenger, etc..



Knowledge Engineering The Game Build



Players' Handbook



Players' Handbook

- **Artifact used to orient game players in the C2 Structure, processes and tools**
- **"SOP" document**
- **Roles and Responsibilities Delineated**
 - **Knowledge Managers**



Role of the Knowledge Manager

- **Facilitate better and faster command decisions and component actions**
- **Help to measure and reduce information viscosity**
- **Help to enhance organizational and process alignment**
- **Ensuring the staff has adequate access to the information needed to perform their jobs**



Specific KM Responsibilities

- **Maintain awareness of the CDR's information requirements**
- **Enforce Business Rules**
- **Oversee, assess, understand the Information Flow**
- **Understand the intent of the IT tools at Global**
- **Coordinate training**
- **Work with technographer to resolve IT support challenges**



Metrics Game Execution



- **Assessing the C2 structure's ability to translate "desired effects" into effective tasking**
- **Did the net-centric environment:**
 - Give CJTF timely, relevant and more accurate information to use in making decisions; ability to control battle tempo?
 - Give CJTF Option of increasing speed of decision?
 - Give more confidence that decisions were correct?
 - Improve collaboration and shared awareness?
 - Give subordinates a better understanding of what the CJTF wants?
 - Give CJTF a better understanding of force status?
 - Give forces the info required to execute CJTF directives?



Lessons Learned

- **Technological implementation requires a framework**
- **Knowledge base needs a nexus or core that will allow sharing of information across information and application centers**
- **Tools are needed to identify, prioritize, fuse, filter and share information**
- **Collaboration processes and business rules, procedures need to be established before operations**



Tier One Joint Academy Games



**Getting a fresh look at IT
and IM by playing a
distributed, mini-Global
war game with select
service Academy teams**



SECNAV



Challenges to the DON-CIO e-Business Fair - 30 August 2001

- **Promulgate KM / IT processes and tools**
 - Don't be stove piped - share knowledge; increase the % of the force using the same tools
- **Be efficient**
 - Capture and leverage efficiencies gained across all communities
- **Use our young people**
 - Tap into intellectual capacity of the next generation



Shared Situation Awareness Experiment

- **Months of coordination to put a line in the sand**
- **USNA and USAFA**
- **Will add USCGA and USMA in next one**
- **Scud Hunt and SSA variables**
- **Creating SW - "Push Viz"**
- **JPME C2 Training.**



Contact Information

Tom Rossi - NWC

rossit@nwc.navy.mil

(401) 841-3458 (DSN 948)

Gia Harrigan - NUWC

harriganm@npt.nuwc.navy.mil

(401) 832-1835 (DSN 948)